ASSIGNMENT 3

Textbook Assignment: "Horizontal Construction." Pages 3-1 through 3-19.

Learning Objective: Identify and describe road nomenclature and associated terminology used in construction drawings.

3-1. Which of the following is NOT an example of a military road?

1. Two-lane highway
2. Airfield runway
3. Parking apron
4. Quarry hauling road

A.	Cut
B.	Final grade
C.	Existing grade
D.	Fill
E.	Subgrade
F.	Surface

Figure 3A

IN ANSWERING QUESTIONS 3-2 THROUGH 3-5, SELECT FROM FIGURE 3A THE TERM THAT IS BEST DEFINED BY THE QUESTION.

3-2. The completed road surface elevation.

1. B
2. C
3. E
4. F

3-3. The undisturbed earth on an initial survey.

1. B
2. C
3. E
4. F

3-4. The distance required to get down to the final grade.

1. A
2. B
3. D
4. F

3-5. The portion of the road that is at final grade.

1. C
2. D
3. E
4. F

3-6. What term best describes the difference in elevation between the edge of the finished road and the center line?

1. Slope ratio
2. Superelevation
3. Crown
4. Roadway

3-7. What term defines the limits of the earthwork for a road?

1. Roadbed
2. Shoulder
3. Traveled way
4. Roadway

3-8. You are the notetaker on a road survey crew. All man-made objects should be noted in the book in what manner?

1. By station number only
2. By distance from the center line only
3. By station number and distance from the center line
4. By the approximate location and distance

3-9. The drawing that contains construction limits, station markings, and all curve information is known by what name?

1. Profile plan
2. Road plan
3. Plan-and-profile sheet
4. Site plan

3-10. What is the minimum information needed by a survey crew to perform the preliminary route survey?

1. Selected route
2. Aerial photographs
3. Area topography
4. Plan-and-profile sheet

3-11. Which of the following terms is another name for “I” when discussing curve data?

1. Degree of curvature
2. Deflection angle
3. Radius
4. Interior angle

3-12. Which of the following angles describe the relationship between the radius and (a) the point of curvature and (b) the point of tangency?

1. (a) 45° angle (b) 90° angle
2. (a) 90° angle (b) 45° angle
3. (a) 45° angle (b) 45° angle
4. (a) 90° angle (b) 90° angle

3-13. The length of a curve is measured from what points?

1. From the PI to the PC and the PT
2. Along the curve from the PC to the PT
3. Along the radius to the PT
4. Along the radius to the PC

3-14. What is the radius of a 30° curve?

1. 198.90 ft
2. 189.90 ft
3. 190.98 ft
4. 198.98 ft

3-15. If I = 62° and D = 30°, what is the length of the curve?

1. 206.67 ft
2. 206.76 ft
3. 207.67 ft
4. 207.76 ft

3-16. “Superelevation” is defined as the difference in elevation between the

1. center line and the outside edge
2. center line and the inside edge
3. inside edge and the outside edge
4. PC and the PT

3-17. A control point cannot be a PT or POT.

1. True
2. False

3-18. Vertical curves may have which of the following values?

1. Positive only
2. Negative only
3. Positive or negative

3-19. A road profile is a vertical section along the center line.

1. True
2. False

3-20. A grade line may represent final elevation or subgrade elevation.

1. True
2. False

3-21. A vertical curve differs from a horizontal curve in which, if any, of the following ways?

1. The way the length is measured
2. The stations start at 0 + 00
3. Laid out using a constant radius
4. None of the above

3-22. A vertical curve at the crest of a hill is what type of curve?

1. Sag
2. Undervertical
3. Overhead
4. Summit

3-23. When the center-line grade rises 3 feet in 75 feet horizontal distance, what is the slope of the grade line?

1. +3.0%
2. -3.0%
3. +4.0%
4. -4.0%

3-24. In a road plan, what term is used to designate grade points?

1. Station
2. Profile
3. Elevation
4. Grade

3-25. On a road plan. station numbers are (a) lettered and (b) located in what manner?

1. (a) Horizontally above the profile
   (b) right of the appropriate vertical grid line
2. (a) Horizontally below the profile
   (b) left of the appropriate vertical grid line
3. (a) Horizontally above the profile
   (b) centered on the appropriate vertical grid line
4. (a) Horizontally below the profile
   (b) centered on the appropriate vertical grid line

3-26. In a profile and grade-line drawing, all drainage structures are dimensioned by

1. station
2. type
3. detail
4. notes

3-27. The minimum clearing width on the left side of the roadway is how much greater than construction limits?

1. 5 ft
2. 6 ft
3. 10 ft
4. 12 ft

3-28. Which of the following materials may be used as a base course in road construction?

1. Sand
2. Gravel
3. Concrete
4. Each of the above

3-29. The surface course is placed over the

1. base
2. subgrade
3. subbase
4. roadbed

3-30. A typical section of a road shows exactly what about the road?

1. How it looks before construction begins
2. How it will look upon completion
3. How it should look after construction
4. How it looks at station 0 + 00 and the final station only

3-31. A typical straight road section differs from a typical curve section in what way?

1. Shape of the road only
2. Width of the road only
3. Shape and width of the road

3-32. You have completed a route survey and are to draw cross sections from the notes. What type of section will be drawn first?

1. Preliminary
2. Final
3. Typical
4. As-built

3-33. Preliminary cross sections are used in conjunction with (a) what sections and (b) for which of the following purposes?

1. (a) Final (b) to determine as-built conditions
2. (a) As-built (b) to determine construction errors
3. (a) Typical (b) to determine existing material usefulness
4. (a) finished roadbed (b) to determine earthwork requirements

3-34. Final cross sections show which of the following information?

1. Finished elevation
2. Actual cross-sectional shape of the curves
3. Distances of ditches from the center line
4. Each of the above

3-35. When, if ever, should a route be relocated due to drainage problems?

1. When planned through a forest
2. When located in a floodplain
3. When underground springs are a mile away
4. Never

3-36. Which, if any, of the following actions should be taken during road construction to prevent standing puddles on the roadway?

1. Slant the worked surface of the road to provide quicker runoff
2. Cut ditches outside the construction limits
3. Raise the final grade of the roadway
4. None of the above

3-37. A perforated pipe is placed in the bottom of a trench and backfilled to a designated depth to lower the water table. What term describes this action?

1. French drain
2. Trenching
3. Bleeders
4. Tile drain

3-38. You lay out a 50-foot ditch for subsurface drainage. What is the minimum grade, in feet, allowed?

1. 0.10
2. 0.15
3. 0.25
4. 0.30

3-39. Which, if any, of the following effects does rainfall have on a roadway?

1. Cleans the road surface
2. Erodes the roadway
3. Weakens road if allowed to stand
4. None of the above

3-40. Your center-line elevation is 0.25 feet higher than the edge of the road. What term best describes this condition?

1. Superelevation
2. Drainage
3. Ditching
4. Crown

3-41. Which of the following factors should you consider when determining the size and type of roadway ditches?

1. Soil types
2. Lay of the land
3. Volume of water
4. Each of the above

3-42. Which of the following conditions occur when using a minimum grade on ditches?

1. Excessive erosion
2. Increased water-runoff velocity
3. Ponding effect

3-43. The purpose of check dams is to

1. collect water
2. slow waters
3. form ponds
4. beautify the roaduay

3-44. What type of ditch should be used to move a large volume of water?

1. V-bottom
2. Diversion
3. Trapezoidal
4. Flat bottom

3-45. Which of the following materials has the greatest amount of runoff?

1. Stones
2. Solid rock
3. Sand
4. Silt

3-46. In road construction, whenever a road crosses a stream with a 9-foot cross drain, the drain structure used is called

1. a culvert
2. a bridge
3. a diversion ditch
4. a channel

3-47. Diversion ditches drain excess water away from the roadway to what system?

1. Interceptor ditches
2. Natural earth drains
3. Culverts
4. Storm drains

Learning Objective: Identify and describe airfield nomenclature as used in the construction of standard technical drawings.

3-48. What is another name for a runway?

1. Landing strip
2. Landing area
3. Taxiway
4. Transition surface

3-49. What surface provides access to and from the runway for aircraft?

1. Apron
2. Hardstand
3. Taxiway
4. End zone

3-50. The dimensions for the end zone are specified by what authority?

1. Federal Aviation Authority
2. Air wing commander
3. Aircraft industry
4. ABFC design criteria

3-51. On airfields, flexible pavements can be used in which of the following locations?

1. Refueling sites
2. Shoulders
3. Service aprons
4. Runways

Learning Objective: Identify and describe pavements and the basic standard materials used in the construction of roads and airfields.

3-52. The terms “flexible pavement” and “pavement” may be interchanged.

1. True
2. False

3-53. What asphaltic coat is used to help bind the base course to the surface course?

1. Tack coat
2. Seal coat
3. Rain coat
4. Prime coat

3-54. Which of the following materials can be used as a subbase for roads and airfields?

1. Portland cement
2. Ashes
3. Tar
4. Each of the above

3-55. Uncrushed, washed gravel should NOT be used as base course material due to which of the following factors?

1. Too high a moisture content
2. Lack of fine material
3. Too much binder material
4. Lack of clay content

3-56. When, if ever, should a base course of sandy and gravelly material be used?

1. For light loads with low-bearing values
2. For limited use
3. For heavy loads with high-bearing values
4. Never

3-57. A coarse, crushed aggregate is placed in a relatively thin layer and rolled into place. This is the first step in preparing what type of base?

1. Stabilized
2. Coarse graded
3. Waterbound
4. Macadam

3-58. When sand, gravel, and crushed rock are not available, a base course can be developed from which of the following materials?

1. Cinders
2. Iron ore
3. Shells
4. Each of the above

3-59. What is the most important consideration when using caliche?

1. Moisture content
2. Gradation
3. Compactive effort
4. Drainage

3-60. What type of equipment is recommended for the compaction of tuff?

1. Grader
2. Scraper
3. Sheepsfoot roller
4. Smooth drum roller

3-61. What is the maximum lift for a bituminous base course, in inches?

1. 1.5
2. 2.5
3. 3.5
4. 4.5

3-62. What thickness of bituminous base course, in inches, is equal to 6 inches of concrete base course?

1. 6
2. 8
3. 3
4. 4